
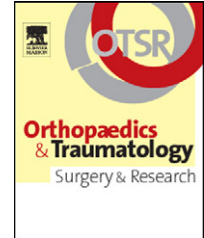




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## CLINICAL REPORT

# Complete suprapatellar plica presenting like a tumor

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### KEYWORDS

Knee;  
Plica;  
Plica synovialis;  
Synovial tumor

**Summary** Although synovial plicae of the knee are frequently observed in adults and often bilateral, they remain, in most cases, asymptomatic. Pain is thus the most commonly encountered symptom. We report the case of an unusual complete suprapatellar plica of pseudotumoral aspect. Suprapatellar plicae account for 58 to 87% of all plicae of the knee and mostly remain asymptomatic except in case of a complete septum. A 17-year-old male presented with complaints of his right knee with local discomfort for more than one-year duration. The pain mostly arose following a prolonged sitting position but with no significant pain in the knee otherwise. The presence of an anterolateral suprapatellar mass at clinical examination required the need for further tests (standard X-rays and MRI). On MR imaging, the liquid aspect of this mass associated with a complete suprapatellar bandlike structure separating the sub-quadricepsal recess from the knee joint suggested the diagnosis of a complete septum type of suprapatellar plica. Treatment consisted in an arthroscopic resection. Anatomopathologic verification of the removed tissues confirmed the benignant nature of this resected material. Outcome was favourable with disappearance of the knee discomfort and suprapatellar septum.

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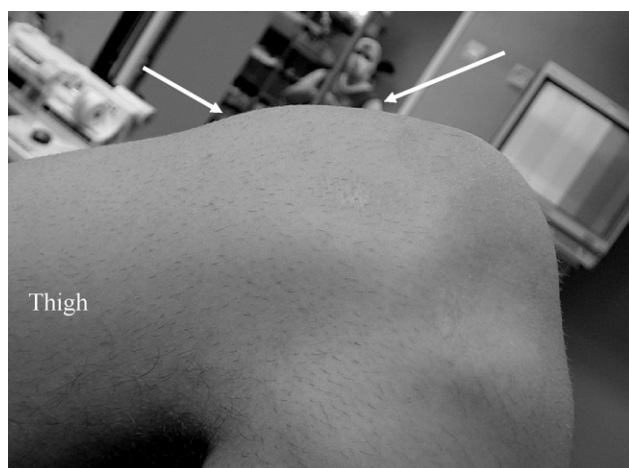
## Introduction

Plicae, persistent remnant of the embryologic synovial membrane, are frequently observed in adults (from 20 to 90% of the population) but remain asymptomatic in most cases [1–4]. Synovial folds were classified into four distinct anatomical patterns: superior, medial, inferior and lateral. Pipkin was the first one to establish correlation between synovial folds and clinical manifestations in 1950 [5]. Pain

is the most commonly encountered symptom. Suprapatellar plica accounts for 58 to 87% of all plicae of the knee joint and reveals bilateral in 60% of cases [1,3,4]. Anatomically, the suprapatellar form runs obliquely downward from the quadricepsal synovial recess to the posterior aspect of the quadriceps tendon. According to Dandy's classification [6], 10 patterns ranging from partial to complete patellar membrane can be identified. Zidorn [7] differentiates four suprapatellar plicae: type I: septum completum; type II: septum perforatum; type III: septum residuale (the most frequent according to the author); type IV: septum extinctum in which the septum is completely involuted.

We report on the case of a complete type of suprapatellar plica with an unusual pseudotumoral clinical presentation.

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**Figure 1** Preoperative macroscopic view of suprapatellar septum.

## Observation

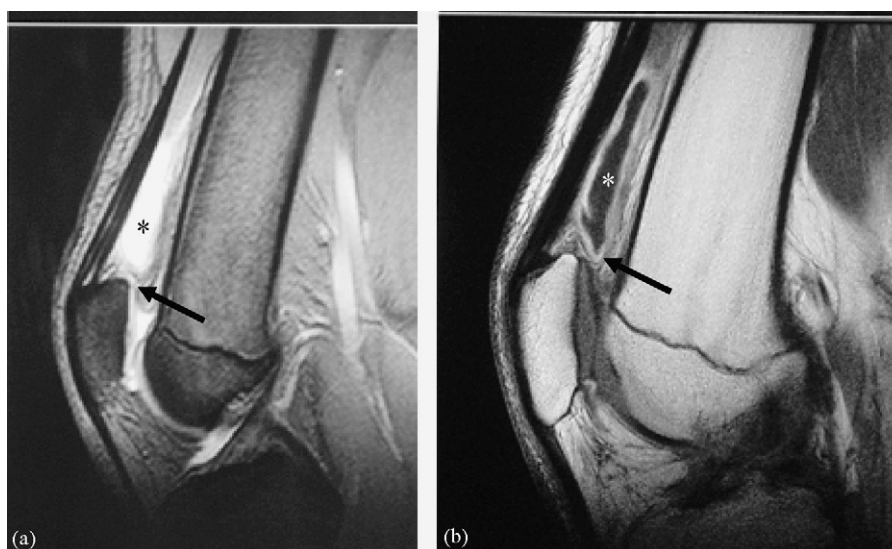
A very sporty 17-year-old male was presented with complaints of discomfort over the anterior aspect of the right knee, mostly arising from a prolonged sitting position but with no significant painful condition and little repercussion on everyday life. A 4-month-history of a suprapatellar septum, predominantly on the anterolateral aspect of the knee and worsening while in knee flexion, motivated thorough examination. Examination revealed a renitent, tensed and painless anterolateral suprapatellar mass (Fig. 1). Knee range of motion was normal but revealed painful in full flexion with local discomfort in the lateral suprapatellar aspect of the knee. No meniscal, patellar or ligament symptomatology was observed. Further examination included face, anteroposterior and patellofemoral views as well as MR imaging. Standard radiographic findings were normal (Fig. 2). On MR imaging, the liquid aspect of this mass

combined with a complete suprapatellar bandlike structure separating the sub-quadricepsal recess from the knee joint cavity suggested the diagnosis of a complete type of suprapatellar plica (Fig. 3). MR imaging eliminated any intra- and periarticular tumor from diagnostic consideration. Treatment consisted in arthroscopic excision (Fig. 3C). Anatomopathology findings revealed a benignant resected material. Outcome was favourable with disappearance of the knee discomfort and suprapatellar septum. At 6-month follow-up, no recurrence and no complaint were reported.

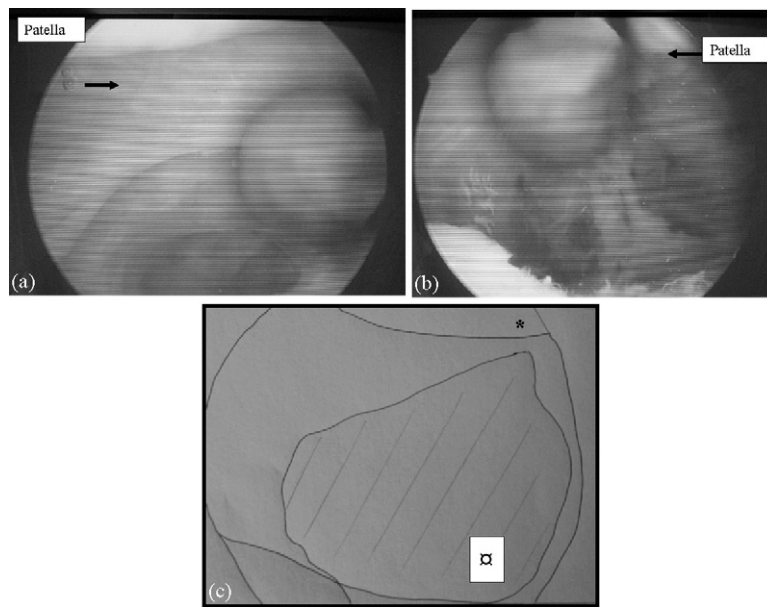
## Discussion

Type III suprapatellar plica (according to Zidorn) is the most commonly encountered but rarely appears symptomatic [8]. However, it might become symptomatic in case of structure changes. According to Pipkin [9], there is an impingement and/or friction between the hard patellar chondral or condylar surface and this less and less elastic structure attributable to the appearance of fibrosis or even calcifications. Suprapatellar plica syndrome manifests clinically as a painful discomfort or intra-articular impairment, more specifically located about the anterior aspect of the knee as reported by Adachi et al. [10] in a basketball player.

Apart from the change in structure, type I complete suprapatellar plica, according to Zidorn's classification, is another classically symptomatic entity. The prevalence of complete suprapatellar plica syndrome varies in the literature, as observed in our study. According to Harty and Joyce [11], suprapatellar plica is of complete type in only 7% of cases whereas Bae et al. [4] report an 88% incidence of complete suprapatellar plicae in a series of 34 patients presenting with suprapatellar plica and complaining of global pain of the knee. Symptomatology is non specific and mimics that of partial suprapatellar plica but is of greater clinical significance. The knee might be of globular aspect, painful, pain being aggravated by a prolonged standing or



**Figure 2** MR imaging. The suprapatellar plica (arrow) separates the sub-quadricepsal bursa (asterisk) from the knee joint. a: fat-suppressed T2-weighted sagittal view. High-signal-intensity sub-quadricepsal bursa; b: T1-weighted sagittal view after injection of contrast material. Low-signal-intensity bursa. Its wall is slightly thickened and contrasts thus revealing a synovitis.



**Figure 3** Intraoperative arthroscopic image. a: view of suprapatellar plica that covers the sub-quadrilateral space; b: view after resection. Arrows: vastus lateralis muscle fibres visible after plica resection; c: arthroscopic view after resection: asterisk: patella; circle: area of plica resection.

sitting position. Physical activity results in pain worsening. Signs and symptoms may include patellar instability or pseudolocking combined with snapping. Clinical findings include a palpable suprapatellar band. Patellar mobilization might be painful but most commonly appears normal. Such pain is symptomatic of a mechanical chondral impingement. Ligament and meniscal symptomatology are usually absent. However, there is an uncommon type of complete suprapatellar plica which has been rarely described in the literature: the pseudotumoral form.

Only seven cases of this extremely rare clinical presentation have been published in the literature: Trout et al. [12]: five cases, De Mot et al. [13]: one case and Peckmezci et al. [14]: one case. Two other observations were similar to this type of clinical presentation: a partitioned suprapatellar osteochondromatosis induced, according to the authors, by a complete type of suprapatellar plica [15,16]. Most of these cases did not report any meniscal or ligament symptomatology, which correlates our observations. Clinical manifestations included a global, anterior and suprapatellar pain of the knee, generally aggravated by physical activity or prolonged standing position. Palpation revealed a suprapatellar mass combined with functional impairment, thus motivating further examination. Trout et al. [12] have pointed out a major element in the patient's anamnesis: previous history of trauma to the knee or intense physical activity (reported in four out of the five cases). They believe it is a turning point in the syndrome development and the genesis of this pseudotumoral mass. According to these authors, such clinical presentation could explain the pathophysiological features with appearance of a posttraumatic or microtraumatic fibrotic structure that results in a thickening of the plica and a loss of its normal elasticity which may be combined with a posttraumatic bleeding. This theory correlates that of Pipkin [9], according to which these findings help explain symptomatic plicae. Further examination

should be carried out when a complete suprapatellar plica of pseudotumoral form is suspected. It is widely accepted that use of standard face and anteroposterior radiographs as well as patellofemoral views combined with MR imaging is highly advisable. It provides accurate diagnosis of the lesion and eliminates any intra- or extra-articular tumoral process. For all authors, arthroscopic resection appears to be an easy and unequivocal treatment in the presence of a pseudotumoral mass. An anapathologic observation of the resected material should be systematically performed. Postoperative management is usually simple. No specific rehabilitation program is advised. Results published in the literature are excellent with disappearance of the pseudotumoral mass and painful condition. No recurrence was reported.

## Conclusion

Diagnosis of complete suprapatellar plica should be made in the presence of anterior knee discomfort combined with intra-articular impairment or suprapatellar septum. Even if rare, the pseudotumoral form of the plica should not impede the diagnosis. MR imaging provides accurate evaluation of synovial plicae and arthroscopic excision is an easy and reliable treatment option.

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